

9.4.5 Infrastructure works code

9.4.5.1 Application

- (1) This code applies to assessing:
 - (a) operational work which requires an assessment as a condition of a development permit or is assessable development if this code is identified in the assessment criteria column of a table of assessment;
 - (b) a material change of use or reconfiguring a lot if:
 - (i) assessable development where this code is identified in the assessment criteria column of the table of assessment;
 - (ii) impact assessable development, to the extent relevant.

Note – The Filling and excavation code applies to operational work for filling and excavation.

- (2) When using this code, reference should be made to Part 5.

9.4.5.2 Purpose

- (1) The purpose of the Infrastructure works code is to ensure that development is safely and efficiently serviced by, and connected to, infrastructure.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) the standards of water supply, waste water treatment and disposal, stormwater drainage, local electricity supply, telecommunications, footpaths and road construction meet the needs of development and are safe and efficient;
 - (b) development maintains high environmental standards;
 - (c) development is located, designed, constructed and managed to avoid or minimise impacts arising from altered stormwater quality or flow, wastewater discharge, and the creation of non-tidal artificial waterways;
 - (d) the integrity of existing infrastructure is maintained;
 - (e) development does not detract from environmental values or the desired character and amenity of an area.

9.4.5.3 Criteria for assessment

Table 9.4.5.3.a – Infrastructure works code –assessable development

Performance outcomes	Acceptable outcomes
For self-assessable and assessable development	
Works on a local government road	
<p>PO1 Works on a local government road do not adversely impact on footpaths or existing infrastructure within the road verge and maintain the flow, safety and efficiency of pedestrians, cyclists and vehicles.</p>	<p>AO1.1 Footpaths/pathways are located in the road verge and are provided for the hierarchy of the road and located and designed and constructed in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual.</p> <p>AO1.2 Kerb ramp crossovers are constructed in accordance with Planning scheme policy SC 5 – FNQROC Regional Development Manual.</p> <p>AO1.3 New pipes, cables, conduits or other similar infrastructure required to cross existing footpaths: (a) are installed via trenchless methods; or (b) where footpath infrastructure is removed to install infrastructure, the new section of footpath is installed to the standard detailed</p>

Performance outcomes	Acceptable outcomes
	<p>in the Planning scheme policy SC5 – FNQROC Regional Development Manual, and is not less than a 1.2 metre section.</p> <p>AO1.4 Where existing footpaths are damaged as a result of development, footpaths are reinstated ensuring: (a) similar surface finishes are used; (b) there is no change in level at joins of new and existing sections; (c) new sections are matched to existing in terms of dimension and reinforcement.</p> <p>Note – Figure 9.4.5.3.a provides guidance on meeting the outcomes.</p> <p>AO1.5 Decks, verandahs, stairs, posts and other structures located in the road reserve do not restrict or impede pedestrian movement on footpaths or change the level of the road verges.</p>
Accessibility structures	
<p>PO2 Development is designed to ensure it is accessible for people of all abilities and accessibility features do not impact on the efficient and safe use of footpaths.</p> <p>Note – Accessibility features are those features required to ensure access to premises is provided for people of all abilities and include ramps and lifts.</p>	<p>AO2.1 Accessibility structures are not located within the road reserve.</p> <p>AO2.2 Accessibility structures are designed in accordance with AS1428.3.</p> <p>AO2.3 When retrofitting accessibility features in existing buildings, all structures and changes in grade are contained within the boundaries of the lot and not within the road reserve.</p>
Water supply	
<p>PO3 An adequate, safe and reliable supply of potable, fire fighting and general use water is provided.</p>	<p>AO3.1 The premises is connected to Council's reticulated water supply system in accordance with the Design Guidelines set out in Section D6 of the Planning scheme policy SC5 – FNQROC Regional Development Manual;</p> <p>or</p> <p>AO3.2 Where a reticulated water supply system is not available to the premises, on site water storage tank/s with a minimum capacity of 10,000 litres of stored water, with a minimum 7,500 litre tank, with the balance from other sources (e.g. accessible swimming pool, dam etc.) and access to the tank/s for fire trucks is provided for each new house or other development. Tank/s are to be fitted with a 50mm ball valve with a camlock fitting and installed and connected prior to</p>

Performance outcomes	Acceptable outcomes
	occupation of the house and sited to be visually unobtrusive.
Treatment and disposal of effluent	
<p>PO4 Provision is made for the treatment and disposal of effluent to ensure that there are no adverse impacts on water quality and no adverse ecological impacts as a result of the system or as a result of increasing the cumulative effect of systems in the locality.</p>	<p>AO4.1 The site is connected to Council's sewerage system and the extension of or connection to the sewerage system is designed and constructed in accordance with the Design Guidelines set out in Section D7 of the Planning scheme policy SC5 – FNQROC Regional Development Manual;</p> <p>or</p> <p>AO4.2 Where not in a sewerage scheme area, the proposed disposal system meets the requirements of Section 33 of the <i>Environmental Protection Policy (Water) 1997</i> and the proposed on site effluent disposal system is designed in accordance with the <i>Plumbing and Drainage Act (2002)</i>.</p>
Stormwater quality	
<p>PO5 Development is planned, designed, constructed and operated to avoid or minimise adverse impacts on stormwater quality in natural and developed catchments by:</p> <ul style="list-style-type: none"> (a) achieving stormwater quality objectives; (b) protecting water environmental values; (c) maintaining waterway hydrology. 	<p>AO5.1 A connection is provided from the premises to Council's drainage system;</p> <p>or</p> <p>AO5.2 An underground drainage system is constructed to convey stormwater from the premises to Council's drainage system in accordance with the Design Guidelines set out in Sections D4 and D5 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.</p> <p>AO5.3 A stormwater quality management plan is prepared, and provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 9.4.5.3.b and Table 9.4.5.3.c, reflecting land use constraints, such as:</p> <ul style="list-style-type: none"> (a) erosive, dispersive and/or saline soil types; (b) landscape features (including landform); (c) acid sulfate soil and management of nutrients of concern; (d) rainfall erosivity. <p>AO5.4 Erosion and sediment control practices are designed, installed, constructed, monitored, maintained, and carried out in accordance with an erosion and sediment control plan.</p> <p>AO5.5 Development incorporates stormwater flow</p>

Performance outcomes	Acceptable outcomes
	<p>control measures to achieve the design objectives set out in Table 9.4.5.3.b and Table 9.4.5.3.c, including management of frequent flows, peak flows, and construction phase hydrological impacts.</p> <p>Note – Planning scheme policy SC5 – FNQROC Regional Development Manual provides guidance on soil and water control measures to meet the requirements of the <i>Environmental Protection Act 1994</i>.</p> <p>Note – During construction phases of development, contractors and builders are to have consideration in their work methods and site preparation for their environmental duty to protect stormwater quality.</p>
Non-tidal artificial waterways	
<p>PO6 Development involving non-tidal artificial waterways is planned, designed, constructed and operated to:</p> <ul style="list-style-type: none"> (a) protect water environmental values; (b) be compatible with the land use constraints for the site for protecting water environmental values; (c) be compatible with existing tidal and non-tidal waterways; (d) perform a function in addition to stormwater management; (e) achieve water quality objectives. 	<p>AO6.1 Development involving non-tidal artificial waterways ensures:</p> <ul style="list-style-type: none"> (a) environmental values in downstream waterways are protected; (b) any ground water recharge areas are not affected; (c) the location of the waterway incorporates low lying areas of the catchment connected to an existing waterway; (d) existing areas of ponded water are included. <p>AO6.2 Non-tidal artificial waterways are located:</p> <ul style="list-style-type: none"> (a) outside natural wetlands and any associated buffer areas; (b) to minimise disturbing soils or sediments; (c) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas. <p>AO6.3 Non-tidal artificial waterways located adjacent to, or connected to a tidal waterway by means of a weir, lock, pumping system or similar ensures:</p> <ul style="list-style-type: none"> (a) there is sufficient flushing or a tidal range of >0.3 m; or (b) any tidal flow alteration does not adversely impact on the tidal waterway; or (c) there is no introduction of salt water into freshwater environments. <p>AO6.4 Non-tidal artificial waterways are designed and managed for any of the following end-use purposes:</p> <ul style="list-style-type: none"> (a) amenity (including aesthetics), landscaping or recreation; or (b) flood management, in accordance with a drainage catchment management plan; or (c) stormwater harvesting plan as part of an integrated water cycle management plan; or (d) aquatic habitat.

Performance outcomes	Acceptable outcomes
	<p>AO6.5 The end-use purpose of the non-tidal artificial waterway is designed and operated in a way that protects water environmental values.</p> <p>AO6.6 Monitoring and maintenance programs adaptively manage water quality to achieve relevant water quality objectives downstream of the waterway.</p> <p>AO6.7 Aquatic weeds are managed to achieve a low percentage of coverage of the water surface area, and pests and vectors are managed through design and maintenance.</p>
Wastewater discharge	
<p>PO7 Discharge of wastewater to waterways, or off site:</p> <ul style="list-style-type: none"> (a) meets best practice environmental management; (b) is treated to: <ul style="list-style-type: none"> (i) meet water quality objectives for its receiving waters; (ii) avoid adverse impact on ecosystem health or waterway health; (iii) maintain ecological processes, riparian vegetation and waterway integrity; (iv) offset impacts on high ecological value waters. 	<p>AO7.1 A wastewater management plan is prepared and addresses:</p> <ul style="list-style-type: none"> (a) wastewater type; (b) climatic conditions; (c) water quality objectives; (d) best practice environmental management. <p>AO7.2 The waste water management plan is managed in accordance with a waste management hierarchy that:</p> <ul style="list-style-type: none"> (a) avoids wastewater discharge to waterways; or (b) if wastewater discharge cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and ground water. <p>AO7.3 Wastewater discharge is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of algal blooms.</p> <p>AO7.4 Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology and:</p> <ul style="list-style-type: none"> (a) avoids lowering ground water levels where potential or actual acid sulfate soils are present; (b) manages wastewater so that: <ul style="list-style-type: none"> (i) the pH of any wastewater discharges is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium and other metals; (ii) holding times of neutralised wastewater ensures the flocculation and removal of any dissolved iron prior to release; (iii) visible iron floc is not present in any



Performance outcomes	Acceptable outcomes
	discharge; (iv) precipitated iron floc is contained and disposed of; (v) wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.
Electricity supply	
PO8 Development is provided with a source of power that will meet its energy needs.	AO8.1 A connection is provided from the premises to the electricity distribution network; or AO8.2 The premises is connected to the electricity distribution network in accordance with the Design Guidelines set out in Section D8 of the Planning scheme policy SC5 – FNQROC Regional Development Manual. Note - Areas north of the Daintree River have a different standard.
PO9 Development incorporating pad-mount electricity infrastructure does not cause an adverse impact on amenity.	AO9.1 Pad-mount electricity infrastructure is: (a) not located in land for open space or sport and recreation purposes; (b) screened from view by landscaping or fencing; (c) accessible for maintenance. AO9.2 Pad-mount electricity infrastructure within a building, in a Town Centre is designed and located to enable an active street frontage. Note – Pad-mounts in buildings in activity centres should not be located on the street frontage.
Telecommunications	
PO10 Development is connected to a telecommunications service approved by the relevant telecommunication regulatory authority.	AO10 The development is connected to telecommunications infrastructure in accordance with the standards of the relevant regulatory authority.
PO11 Provision is made for future telecommunications services (e.g. fibre optic cable).	AO11 Conduits are provided in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual.
Road construction	
PO12 The road to the frontage of the premises is constructed to provide for the safe and efficient movement of: (a) pedestrians and cyclists to and from the site;	AO12.1 The road to the frontage of the site is constructed in accordance with the Design Guidelines set out in Sections D1 and D3 of the Planning scheme policy SC5 – FNQROC Regional Development

Performance outcomes	Acceptable outcomes
<p>(b) pedestrians and cyclists adjacent to the site; (c) vehicles on the road adjacent to the site; (d) vehicles to and from the site; (e) emergency vehicles.</p>	<p>Manual, for the particular class of road, as identified in the road hierarchy.</p> <p>AO12.2 There is existing road, kerb and channel for the full road frontage of the site.</p> <p>AO12.3 Road access minimum clearances of 3.5 metres wide and 4.8 metres high are provided for the safe passage of emergency vehicles.</p>
Alterations and repairs to public utility services	
<p>PO13 Infrastructure is integrated with, and efficiently extends, existing networks.</p>	<p>AO13 Development is designed to allow for efficient connection to existing infrastructure networks.</p>
<p>PO14 Development and works do not affect the efficient functioning of public utility mains, services or installations.</p>	<p>AO14.1 Public utility mains, services and installations are not required to be altered or repaired as a result of the development;</p> <p>or</p> <p>AO14.2 Public utility mains, services and installations are altered or repaired in association with the works so that they continue to function and satisfy the relevant Design Guidelines set out in Section D8 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.</p>
Construction management	
<p>PO15 Work is undertaken in a manner which minimises adverse impacts on vegetation that is to be retained.</p>	<p>AO15 Works include, at a minimum:</p> <ul style="list-style-type: none"> (a) installation of protective fencing around retained vegetation during construction; (b) erection of advisory signage; (c) no disturbance, due to earthworks or storage of plant, materials and equipment, of ground level and soils below the canopy of any retained vegetation; (d) removal from the site of all declared noxious weeds.
<p>PO16 Existing infrastructure is not damaged by construction activities.</p>	<p>AO16 Construction, alterations and any repairs to infrastructure is undertaken in accordance with the Planning scheme policy SC5 – FNQROC Regional Development Manual.</p> <p>Note - Construction, alterations and any repairs to State-controlled roads and rail corridors are undertaken in accordance with the Transport Infrastructure Act 1994.</p>

Performance outcomes	Acceptable outcomes
For assessable development	
High speed telecommunication infrastructure	
<p>PO17 Development provides infrastructure to facilitate the roll out of high speed telecommunications infrastructure.</p>	<p>AO17 No acceptable outcomes are prescribed.</p>
Trade waste	
<p>PO18 Where relevant, the development is capable of providing for the storage, collection treatment and disposal of trade waste such that:</p> <ul style="list-style-type: none"> (a) off-site releases of contaminants do not occur; (b) the health and safety of people and the environment are protected; (c) the performance of the wastewater system is not put at risk. 	<p>AO18 No acceptable outcomes are prescribed.</p>
Fire services in developments accessed by common private title	
<p>PO19 Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.</p>	<p>AO19.1 Residential streets and common access ways within a common private title places hydrants at intervals of no more than 120 metres and at each intersection. Hydrants may have a single outlet and be situated above or below ground.</p> <p>AO19.2 Commercial and industrial streets and access ways within a common private title serving commercial properties such as factories and warehouses and offices are provided with above or below ground fire hydrants located at not more than 90 metre intervals and at each intersection. Above ground fire hydrants have dual-valved outlets.</p>
<p>PO20 Hydrants are suitable identified so that fire services can locate them at all hours.</p> <p>Note – Hydrants are identified as specified in the Department of Transport and Main Roads Technical Note: 'Identification of street hydrants for fire fighting purposes' available under 'Publications'.</p>	<p>AO20 No acceptable outcomes are prescribed.</p>

Table 9.4.5.3.b – Stormwater management design objectives (Construction phase).

Issue	Design objectives
<p>Drainage control (Temporary drainage works)</p>	<p>(a) Design life and design storm for temporary drainage works: (i) Disturbed open area for <12 months – 1 in 2 year ARI event; (ii) Disturbed open area for 12-24 months – 1 in 5 year ARI event; (iii) Disturbed open area for >24 months – 1 in 10 year ARI event. (b) Design capacity excludes minimum 150mm freeboard. (c) Temporary culvert crossing – minimum of 1 in 1-year ARI hydraulic capacity.</p>
<p>Erosion control (Erosion control measures)</p>	<p>(a) Minimise exposure of disturbed soils at any time. (b) Divert water run-off from undisturbed areas around disturbed areas. (c) Determine erosion risk rating using local rainfall erosivity, rainfall depth, soil loss rate or other acceptable methods. (d) Implement erosion control methods corresponding to identified erosion risk rating.</p>
<p>Sediment control measures (sediment control measures, design storm for sediment control basins, Sediment basin dewatering)</p>	<p>(a) Determine appropriate sediment control measures using: (i) potential soil loss rate; or (ii) monthly erosivity; or (iii) average monthly rainfall. (b) Collect and drain stormwater from disturbed soils to sediment basin for design storm event: (i) design storm for sediment basin sizing is 80th% five-day event or similar. (c) Site discharge during sediment basin dewatering: (i) TSS < 50mg/L TSS; (ii) Turbidity not > 10% receiving water's turbidity; (iii) pH 6.5-8.5.</p>
<p>Water quality (Litter and other waste, hydrocarbons and other contaminants)</p>	<p>(a) Avoid wind-blown litter; remove grass pollutants. (b) Ensure there is no visible oil or grease sheen on released waters. (c) Dispose of waste containing contaminants at authorised facilities.</p>
<p>Waterway stability and flood flow management (Changes to the natural hydraulics and hydrology)</p>	<p>(a) For peak flow for the 100% AEP event and 1% AEP event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.</p>

Table 9.4.5.3.c – Stormwater management design objectives (post-construction phase)

Design objectives				Application
Minimum reductions in mean annual load from unmitigated development (%)				
Total suspended solids (TSS)	Total phosphorus (TP)	Total nitrogen (TN)	Gross pollutants >5mm	
80	60	40	90	<p>Development for urban purposes</p> <p>Excludes development that is less than 25% pervious.</p> <p>In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets of 1.5% of contributing catchment area.</p>
<p>Water stability management</p> <p>(a) Limit peak 100% AEP event discharge within the receiving waterway to the pre-development peak 100% AEP event discharge.</p>				<p>Catchments contributing to un-lined receiving waterway. Degraded waterways may seek alternative discharge management objectives to achieve waterway stability.</p> <p>For peak flow for the 100% AEP event, use co-located storages to attenuate site discharge rate of stormwater.</p>

Figure 9.4.5.3.a – New footpath sections

